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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
10/549,558	09/19/2005	Rainer Pietig	DE 030091	1461

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P.O. BOX 3001
BRIARCLIFF MANOR, NY 10510

EXAMINER

HANNON, CHRISTIAN A

ART UNIT	PAPER NUMBER
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2618

SHORTENED STATUTORY PERIOD OF RESPONSE	MAIL DATE	DELIVERY MODE
3 MONTHS	04/20/2007	PAPER

Please find below and/or attached an Office communication concerning this application or proceeding.

If NO period for reply is specified above, the maximum statutory period will apply and will expire 6 MONTHS from the mailing date of this communication.

Office Action Summary	Application No. 10/549,558	Applicant(s) PIETIG, RAINER	
	Examiner Christian A. Hannon	Art Unit 2618	

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

- 1) ☒ Responsive to communication(s) filed on 19 March 2007.
- 2a) ☒ This action is **FINAL**. 2b) ☐ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

- 4) ☒ Claim(s) 1-10 is/are pending in the application.
- 4a) Of the above claim(s) _____ is/are withdrawn from consideration.
- 5) ☐ Claim(s) _____ is/are allowed.
- 6) ☒ Claim(s) 1-10 is/are rejected.
- 7) ☐ Claim(s) _____ is/are objected to.
- 8) ☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☐ The drawing(s) filed on _____ is/are: a) ☐ accepted or b) ☐ objected to by the Examiner.
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).
Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

- 12) ☒ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☒ All b) ☐ Some * c) ☐ None of:
1. ☒ Certified copies of the priority documents have been received.
2. ☐ Certified copies of the priority documents have been received in Application No. _____.
3. ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

* See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

- | | |
|--|---|
| 1) <input checked="" type="checkbox"/> Notice of References Cited (PTO-892) | 4) <input type="checkbox"/> Interview Summary (PTO-413) |
| 2) <input type="checkbox"/> Notice of Draftsperson's Patent Drawing Review (PTO-948) | Paper No(s)/Mail Date. _____ |
| 3) <input type="checkbox"/> Information Disclosure Statement(s) (PTO/SB/08) | 5) <input type="checkbox"/> Notice of Informal Patent Application |
| Paper No(s)/Mail Date _____ | 6) <input type="checkbox"/> Other: _____ |

DETAILED ACTION

This action is response to applicant's response filed on 3/19/2007. Claims 1-10 are now pending in the present application. **This action is made final.**

Claim Rejections - 35 USC § 102

1. The following is a quotation of the appropriate paragraphs of 35 U.S.C. 102 that form the basis for the rejections under this section made in this Office action:

A person shall be entitled to a patent unless –

(b) The invention was patented or described in a printed publication in this or a foreign country or in public use or on sale in this country, more than one year prior to the date of application for patent in the United States.

2. Claims 1 & 6 are rejected under 35 U.S.C. 102(b) as being anticipated by Rittenbach (US 4,378,559).

Regarding claim 1, Rittenbach teaches a circuit arrangement for a mobile radio device comprising a power divider (Item 14, Figure 1) for dividing a high frequency transmit signal over at least two antennas (Items 10A & 10B, Figure 1) spatially arranged mutually apart and comprising at least one phase shifter (Item 12a & 13a, Figure 1) connected between one of the antennas and the power divider for generating a phase difference between the transmit signals radiated by the antennas characterized in that the phase shifter is arranged as a non-reciprocal phase shifter so that high frequency receive signals received from the antennas are applied to the power divider without a phase difference. It is noted by the Examiner that the switch along with item 12A of figure 1 is being interpreted as the 'Phase Shifter' and therefore as per TABLE I (Column 2, Line 27) when switch 13A is closed no phase shift is introduced to the signal propagating however when the switch is open a phase shift of 2phi is introduced.

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In regards to claim 6, Rittenbach teaches a mobile radio device comprising a transmit mode/receive module (Figure 1) which includes a power divider (Item 14, Figure 1) for dividing a high frequency transmit signal over at least two antennas (Items 10A & 10B, Figure 1) of the mobile radio device which are spatially arranged mutually apart where a phase shifter for generating a phase difference between the transmit signals radiated by the antennas (Item 12a & 13a, Figure 1) is connected between one of the antennas and the power divider characterized in that the phase shifter is arranged as a non reciprocal phase shifter so that high frequency receive signals received from the antennas are applied to the power divider without a phase difference. It is noted by the Examiner that the switch along with item 12A of figure 1 is being interpreted as the 'Phase Shifter' and therefore as per TABLE I (Column 2, Line 27) when switch 13A is closed no phase shift is introduced to the signal propagating however when the switch is open a phase shift of 2ϕ is introduced.

Claim Rejections - 35 USC § 103

3. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

4. Claims 2, 3, 7 & 8 are rejected under 35 U.S.C. 103(a) as being unpatentable over Rittenbach in view of Coe et al (US 4,812,855), hereinafter Coe.

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Regarding claim 2, Rittenbach teaches the circuit arrangement of claim 1, however Rittenbach fails to explicitly teach the use of dipole antennas. Coe teaches dipole antennas (Column 1, Lines 61-64; Coe). Therefore it would have been obvious to one of ordinary skill in the art at the time the invention was made to incorporate dipole antennas, such as that taught by Coe, into the teachings of Rittenbach in order to provide a commonly well known art-equivalent antenna.

With respect to claim 3, Rittenbach & Coe teach the circuit arrangement as claimed in claim 2, furthermore Coe teaches that dipole axes of antennas are aligned parallel to each other (Column 1, Lines 61-68; Column 2, Lines 1-2; Coe).

Regarding claim 7, Rittenbach teaches the device of claim 6, however Rittenbach fails to explicitly teach the use of dipole antennas with their axes aligned in parallel. Coe teaches dipole antennas aligned in parallel (Column 1, Lines 61-68; Coe). Therefore it would have been obvious to one of ordinary skill in the art at the time the invention was made to incorporate dipole antennas aligned in parallel, such as that taught by Coe, into the teachings of Rittenbach in order to provide a commonly well known art-equivalent antenna.

In regards to claim 8, Rittenbach and Coe teach the mobile radio device of claim 7 characterized in that the antennas of the mobile radio device are arranged in different distances from the head of a user of the mobile radio device. Rittenbach teaches the use of an equilateral triangle antenna arrangement therefor the peaks of the antennas would be at different distances from a users head (Column 2, Lines 54-60; Rittenbach)

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5. Claims 4 & 5 are rejected under 35 U.S.C. 103(a) as being unpatentable over Rittenbach.

Regarding claim 4, Rittenbach teaches the circuit arrangement of claim 1, furthermore while Rittenbach does not explicitly teach that the distance between the antennas is smaller than the wavelength of the transmit mode and receive signals and in that the phase difference between the transmit signals radiated by the antennas is 180 degrees at most, Rittenbach does teach that the ϕ is given by $(2\pi h \sin \alpha / \lambda)$ and that the axes are given in a parallel spaced points of an equilateral triangle given altitudes of $h = BD$ with all sides equal to $2h/\sqrt{3}$ (Column 1, Lines 58-68; Column 2, Lines 1-2, 54-60; Rittenbach) therefore Rittenbach reads on the current claim language if one were to implement particular values for ϕ and α in order to implement a particular system protocol.

In regards to claim 5, Rittenbach teaches the circuit arrangement of claim 5 furthermore Rittenbach teaches that the distance between the antennas corresponds to one or two tenths of the wavelength of the transmit mode and receive signals and in that the phase difference between the transmit signals radiated by the antennas is 100 to 145 degrees (Column 1, Lines 58-68; Column 2, Lines 1-2, 54-60; Rittenbach).

6. Claims 9 & 10 are rejected under 35 U.S.C. 103(a) as being unpatentable over Rittenbach in view of Leipala (US 2002/0086643).

Regarding claims 9 & 10, Reichert teaches the circuit and device of claims 1 & 6, however Reichert fails to disclose wherein the non-reciprocal phase shifter is a three-

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port circulator. Leipala teaches a phase shifter as a three-port circulator (Page 1, [0016]; Leipala). Therefore it would have been obvious to one of ordinary skill in the art to combine the teachings of Rittenbach with those of Leipala, in order to provide for the highest possible antenna radiation allowed by the transceivers power amplifiers.

Response to Arguments

7. Applicant's arguments filed 3/19/2007 have been fully considered but they are not persuasive.

Regarding claims 1 & 6 the Applicant contends that "Rittenbach does not disclose or suggest the use of non-reciprocal phase shifter, so that high frequency receive signals received from the antennas (2,3) are applied to the power divider (1) without a phase difference" (Page 4, Lines 12-15; Applicant Remarks). The Examiner maintains that as 'non-reciprocal' merely refers to a bi-directional component, that which process transmitted signals and received signals in this case, the stance the Examiner has set forth in the Non-Final Rejection dated 1/16/2007, that "the switch along with Item 12A of figure 1 [are] being interpreted as the 'Phase Shifter' and therefore as per TABLE I (Column 2, Lines 27) when switch 13A is closed no phase shift is introduced to the signal propagating, however when the switch is open a phase shift of 2ϕ is introduced" (Page 3, Lines 4-7; Non-Final Rejection), remains proper in rejecting the recited claim language. Simply put, when transmitting with switch 13A open, the phase shift is applied, when receiving with switch 13A closed no phase shift is applied.

Regarding claims 2, 3, 7 & 8, the applicant contends that Coe "does not describe any phase shifters, let alone the non-reciprocal phase shifter of claims 2, 3, 7 & 8" (Page 5, Lines 2-3; Applicant Remarks). The Examiner maintains that Coe does not need to teach phase shifters as the Examiner has relied on Rittenbach for this teaching.

Regarding claims 4, 5, 9 & 10, the Examiner maintains that as the Rittenbach reference does in fact read on the recited claim language these claims remain rejected.

Conclusion

8. **THIS ACTION IS MADE FINAL.** Applicant is reminded of the extension of time policy as set forth in 37 CFR 1.136(a).


A shortened statutory period for reply to this final action is set to expire THREE MONTHS from the mailing date of this action. In the event a first reply is filed within TWO MONTHS of the mailing date of this final action and the advisory action is not mailed until after the end of the THREE-MONTH shortened statutory period, then the shortened statutory period will expire on the date the advisory action is mailed, and any extension fee pursuant to 37 CFR 1.136(a) will be calculated from the mailing date of the advisory action. In no event, however, will the statutory period for reply expire later than SIX MONTHS from the mailing date of this final action.

9. Any inquiry concerning this communication or earlier communications from the examiner should be directed to Christian A. Hannon whose telephone number is (571) 272-7385. The examiner can normally be reached on Mon. - Fri. 8:00 AM - 4:30 PM.

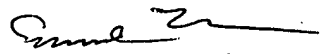
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If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Ed Urban can be reached on (571) 272-7899. The fax phone number for the organization where this application or proceeding is assigned is 571-273-8300.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free). If you would like assistance from a USPTO Customer Service Representative or access to the automated information system, call 800-786-9199 (IN USA OR CANADA) or 571-272-1000.



C. A. Hannon
April 13, 2007



EDWARD F. URBAN
SUPERVISORY PATENT EXAMINER
TECHNOLOGY CENTER 2600